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ABSTRACT

This material on matrices is part of "Introduction to College Mathematics" (ICM), designed to prepare high school students who have students who have completed algebra II for the variety of mathematics they will encounter in college and beyond. The concept goals of this unit are to use matrices to model real-world phenomena, to use matrices as discrete data structures, and to understand the elementary matrix algebra needed in various mathematical models. This unit presents matrices in contexts that empower students to solve problems that would be considerably more difficult, or not feasible at all, with the use of matrices. Most sections require only the skills usually mastered in algebra I, however, in the last section, some knowledge of trigonometry is also required. Sections include: (1) "Introduction and Overview"; (2) "Matrix Addition and Scalar Multiplication"; (3) "A Common-Sense Approach to Matrix Multiplication"; (4) "The Leontief Input-Output Model and the Inverse of a Matrix"; (5) "The Leslie Matrix Model"; (6) "Markov Chains"; and (7) "Computer Graphics." Numerous examples and exercises, with answers, are included. Computer software and a user's guide accompany this unit. The software provides the tools for performing all of the matrix calculations found in this unit. (YP)

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